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To Preserve the Palisades.

IN one of his journals, Thoreau, in speaking of the natural beauties of a country, declares that they have a high use which dollars and cents cannot represent. If the inhabitants of any town or state were wise they would spare no pains to preserve such beauties, for they furnish a kind of education that no hired teachers, preachers or school systems can supply. The most impressive object he found in a certain New England town was a noble Oak-wood to which he felt assured that men from all parts of the country would make pilgrimages a hundred years hence if the town would only save it. But if the people there were of the same temper with the inhabitants of many other towns they would estimate the value of the grove only for what the trees would bring as timber. In many countries precious metals belong to the crown, so here more precious objects of rare beauty should belong to the public. The summit of Mount Washington was once in litigation before the New Hampshire courts, which were to decide whether it belonged to A or B. "Think of a mountain-top," he adds, "which even the Indians reverenced as a sacred spot, only accessible through private grounds—a temple which no man can enter without the danger of letting out or letting in somebody's cows!"

No doubt, this is fundamental truth on which Thoreau here takes his stand, but, after all, he is bringing up a form of the old and ever-recurring problem, how to reconcile the rights of the individual with the rights of society. The ocean is free to every keel, and yet there are miles along our coast-line where the people are fenced away from its beach, as if they had no right even to look at a spectacle which in all time has been a source of health and inspiration to man. Places with a history which ought to stir the pulse of patriotism have been degraded into low resorts by landowners, who prize and use their historic associations simply as an advertisement. But it is not just to denounce people as criminal for using what is their own property as may suit their advantage within the limits of the law. If any one is censured, the blame should not rest solely on the men who devastate natural beauty or places rendered sacred by some noble action in the past. It is rather the fault of society, which has never decided what are the rights of the individual to the beauty of the world into which it has been born. One reason for this is that we do not recognize the real value of such spectacles and associations as an uplifting and civilizing force. Libraries have been written to prove the value of art as a refining influence on society, and a man would be justly considered a vandal who should destroy a priceless painting of some old master, even if it were his own private property. But vandal is a harsh word to apply to the men who are blasting down the face of the Palisades and defacing the dignified portal through which one of the noblest rivers of the world enters one of its noblest harbors, and yet no one can deny that the destruction of the Palisades would be a calamity more serious than the loss of any work of art on the continent.

We allude once more to the danger which threatens the Palisades because the Governor of New Jersey in his late message invited the attention of the Legislature to the matter, and has suggested the passage of certain acts which he thinks will prevent this magnificent natural rampart from becoming a prey to the quarryman. The purchase of the Palisades throughout their entire length as a public park Governor Werts considers out of the question on account of its expense. What gives the rock its market value, however, is its proximity to navigable water and the ease with which it can be loaded for transportation. Some of the riparian rights of the state have been disposed of, but it still practically owns two and a half miles of the shore, including those portions now utilized by the quarrymen. The Governor recommends that the riparian laws of the state be so modified that the building of stone-breakers or piers for working and loading the rock shall not be permitted on the state lands, and that none of the water-rights of the state shall be disposed of without such limitations as will make the work of quarrying unprofitable. We are by no means assured that such legislation would save the Palisades. Nevertheless, it would be well if such a law were enacted, so that a practical test of its value could be made.

Another suggestion in the message of Governor Werts is to be commended without reserve, and that is the appointment of a commission under a general act to receive and hold such lands in the state as they may deem for any reason worthy of reservation for public use. This is practically a similar commission to the one organized in Massachusetts, which we have had frequent occasion to speak of with approval. If the people of any state feel that their rights in spots which are hallowed by tradition or are inspiring by their beauty are being infringed upon, they must organize to assert these rights, and no better plan has yet been devised than this board of trustees of public Reservations in Massachusetts. There are few other states in the Union where a man who owns a battlefield or a waterfall in fee simple can give it to the public, much less sell it, because no one is entitled to hold it legally for the state. The existence of a continuous body like these trustees is a constant invitation to public-spirited citizens to make over for the public use forever many places which ought to be reserved. Governor Werts thinks that if such a commission in New Jersey could secure a few points on the Palisades besides those which would be protected under the modified riparian act the danger would be averted. Let us hope that this will prove correct.

In any event, neither New Jersey nor any other state can err in organizing a perpetual board of trustees to hold forever all places whose history or natural character justifies their reservation as public property for public use. It is a pleasure to add that, since the foregoing paragraphs were written, a bill has been introduced into the New York State Senate to create a commission for this purpose, composed of eminent citizens from different parts of the state, and that the bill expressly authorizes the commission to coöperate with similar bodies in other states, where joint action is

desirable for the preservation of such places as the Palisades.

Jean François Boursault.

EVERY one knows the Boursault Rose, of a race of hardy climbers, whose parent is the European Rosa alpina, although probably very few people know much of the man, once a conspicuous character in Parisian life, whose name it now best commemorates; and we are glad of the opportunity to publish some facts concerning him, for which we are indebted to our correspondent, Monsieur Edward André, of Paris.

Jean François Boursault was born in Paris in 1752, or, according to the *Dictionnaire Larousse*, toward 1760, and died in Paris in 1842. He was the great-grandson of Edme Boursault, a poet and author of some celebrity, and the son of a linen-draper in easy circumstances of the Quartier des Innocents. Boursault early left Paris to follow a band of traveling players, making for himself some reputation in his earliest rôles. Admiration for his ancestor, the dramatic author, influenced his choice of the theatrical profession, and out of respect to the memory of his name, which he did not want to run the risk of having hissed, he adopted that of Malherbe, which he retained as long as he continued on the stage. Boursault established a French theatre at Palermo, but being unfortunate and his affairs involved, he took advantage one day of King Ferdinand's passing to throw himself into the sea. This excellent method of getting his head above water, as a wit of the time remarked, succeeded admirably. A crowd collected, the curiosity of the king was excited, and Malherbe, who had been fished from the water, was brought before him. The actor described his miserable condition in such a dramatic manner that the sympathy of the king was moved and he gave him money enough to pay his debts. Returning to Paris at the beginning of the Revolution, Boursault plunged into the movement with enthusiasm, but soon afterward returned to the stage, and had built for himself in the Passage des Nourrices, between the Rue St. Martin and the Rue Quincampoix, a theatre which he called Théâtre Molière. In 1806 Boursault changed the name of his theatre, which he now called Théâtre des Variétés Étrangères, and undertook to play Shakespeare, Schiller, Lope de Vega, etc., an undertaking which soon failed. Next we find him engaged in cleaning the streets of Paris. His street-cleaning contract and the gambling-houses, which he obtained control of later, made him immensely rich, and he became known for his taste in horticulture and his collections of plants. The garden of his villa in Rue Blanche and his gallery of pictures were among the most famous in Europe. He collected in his hot-houses the rarest plants of the two hemispheres. In 1830 he bought for three millions of francs the Salle Ventadour and became director of the Opéra Comique. This venture was not successful, and he was on the point of failing, but eventually was able to save his fortune. After this, with the capriciousness of old age, Boursault sold his famous gallery, pulled down his hot-houses, which were the richest and best-stocked in France, and, perhaps, in Europe, destroyed his park, building on its site two rows of houses, which now form the Rue Boursault. This was his last fantasy and his last undertaking, for he died shortly afterward, leaving a large fortune.

Green Ash in the West.

AMONG hard-wood trees the Green Ash has been more extensively planted in the west than any other species, and the method pursued illustrates better, perhaps, than in the case of any other tree, the lack of forest knowledge on the part of planters. The Ash is a light-foliaged tree, and, though slow in growth, it requires full sunlight for its best development. Planted in solid plats, or mixed by rows with other species, it does not shade the ground enough to prevent the growth of weeds and grass, and hence in the west the strong prairie grasses check its growth very seriously. Planted pure in this way, the trees are also apt to grow crooked, and, therefore, when they have attained useful size they are of much less value than if they had been forced to grow straight, as they do when closely surrounded by Box Elders or other good shade-makers.

The Green Ash has a wide western range, extending from the Dakotas to Texas, and following along the streams from the Missouri to the mountains. Although it prefers the deep moist soils of river-bottoms, it can be grown better on upland than many other trees, but its growth in such situations is much slower than it is in moister ground. In the forest plats of the South Dakota Agricultural College, at Brookings, Green Ash is grown more slowly than White Elm, Black Cherry, White Birch, Box Elder or the Poplars, but faster than Burr Oak and Black Walnut. Planted among Box Elders at Brookings it reaches up for the light, and there is little doubt that at ten years of age the Ash will equal, if not overtop, the Box Elder.

I was much interested in the forest-trees growing in the town of Hastings, Nebraska. In the early settlement of the country, about twenty years ago, Mr. Alexander planted a tree-claim near the town, which, in course of time, was divided into town lots, and now the best residence street of Hastings is made beautiful by these plantings. A great many Green Ash are included in this artificial grove, and so greatly do the trees vary in size and in the shape of their seeds that I was strongly of the opinion that there were both White and Green Ash in the plantation. A comparison of the seeds with that of White Ash as grown here, however, proves all the Hastings trees to be Green Ash. It indicates a very great range within the species, both as to habit of growth and form of seed, and explains the very common error, in the west, of mistaking Fraxinus Pennsylvanica, var. lanceolata, the Green Ash, for F. Americana, the more common eastern species.

Washington. *Charles A. Keffer.*

Hybrid Oaks in Western Missouri.

NOT having given much attention to the Oaks of Jackson County, Missouri, beyond noting their geographical and geological distribution, and not having observed any hybrids, I had come to think that there were none in this part of the state. Engelmann had observed and described a number of forms from eastern Missouri and western Illinois, and had even proposed several of these as species, but they have all been enumerated as hybrids in the last edition of Gray's *Manual*. Supposing that hybrid Oaks were comparatively rare, I had not taken the trouble to watch out for them until my attention was attracted by a remarkable one, which I at first thought was the offspring of Quercus alba and Q. Muhlenbergii, and since then I have learned that these hybrids are comparatively common. Of the six hybrids mentioned below I do not recollect to have seen any one described, and they certainly are not given among those in Gray's *Manual*.

Several years ago I observed a tree which seemed to be the offspring of Quercus alba and Q. macrocarpa, near Courtney, Missouri. This was the first I had seen here. The general appearance of the tree was that of Q. macrocarpa, the leaves even being lyrate, but the fruit was plainly that of Q. alba. I gave the tree little attention at the time, and it was not until I had discovered the tree mentioned above that I thought of it as a hybrid. Three years ago I found another tree which I took to be a hybrid between Q. alba and Q. Muhlenbergii. I had sent this to Dr. Britton and Professor Trelease as Q. alba × macrocarpa, and the former wrote me that the fruit was exactly of the eastern Q. Prinus, but it is a clear Q. macrocarpa × Muhlenbergii, as I afterward ascertained by a critical study of the tree and the species in the neighborhood of it.

Two years ago I found what I took to be a hybrid of

Quercus alba and Q. Muhlenbergii, and after observing it for three successive seasons I still think it the same.

Last fall I discovered several more hybrids, and will mention those that I noticed more particularly. A hybrid Quercus macrocarpa × Muhlenbergii was found one mile east of Independence in a grove of Red and Shingle Oaks. It has the light-colored trunk and smoothish limbs of Q. Muhlenbergii, but some of the leaves resemble those of Q. Muhlenbergii and others those of Q. macrocarpa, while the fruit is exactly between that of Q. macrocarpa and of Q. Muhlenbergii, and has no fringe. Another hybrid was observed by myself and Rev. Cameron Mann near Sheffield, in this county, and quite a number of trees were noted. The tree appears to be Q. macrocarpa × bicolor, and they occur in a grove where Q. bicolor and Q. imbricaria were the prevailing Oaks, with no sign of Q. macrocarpa present. The trunks were generally light-colored, as in Q. bicolor, and some of the leaves were those of that species, and others were like those of Q. macrocarpa. The fruit was intermediate in character, but approached that of Q. bicolor in shape and Q. macrocarpa in size.

Another tree, a hybrid evidently of Quercus rubra and Q. imbricaria, was found a mile east of Independence, standing alone in a pasture, but the supposed parents were both present within a short distance. The leaves exhibit all gradations between those of Q. rubra and those of Q. imbricaria, and the fruit is intermediate between the two species, and larger than the fruit of Q. imbricaria.

These six hybrids are derived from six different species, and from the apparent ease with which they intermingle it is expected that there are many more in this locality.

Specimens of all but the first one of the trees noted above are deposited in the herbarium of the Missouri Botanical Garden and in the herbarium of the Arnold Arboretum.

Independence, Mo. *B. F. Bush.*

Foreign Correspondence.

London Letter.

TALAUMAS.—Sir Joseph Hooker begins the one hundred and twenty-first volume of the *Botanical Magazine* with a figure of Talauma Hodgsoni, prepared from a plant which flowered for the first time in cultivation in the temperate house at Kew this summer. The species was discovered by Sir Joseph in 1848, in the eastern Himalaya, forming forests in the valleys of Sikkim, at an elevation of 6,000 feet. He describes it as "one of the noblest of the flowering forest-trees of the Himalaya, a country which, considering its narrow area, contains, perhaps, more handsome Magnoliaceous trees than does any other of equal dimensions in India, if not of the world." The handsomest of all is, of course, Magnolia Campbellii, which is hardy in the warmer parts of this country, and forms a big shrub in the neighborhood of Cork, and when in flower has no rival among the Magnolias grown here.

Talauma Hodgsoni was received at Kew about twenty years ago, and for a time grown in a tropical house. About seven years ago it was removed to the temperate house, where one of the plants is now a handsome tree twenty-five feet high, with leaves two feet long. In Sikkim it grows to a height of forty feet, forming a thick trunk sometimes six feet in girth. The flowers, which are produced singly on the ends of the branches, are six inches across, the fleshy sepals colored vinous purple externally, the petals white, tinged with rose at the tips. They are very fragrant and, unfortunately, very fugacious.

I noticed the flowering of this plant in one of my letters to GARDEN AND FOREST a few weeks ago, and shortly afterward received from Mr. H. Nehrling, of the Milwaukee Public Museum, a letter suggesting that as the genus Talauma would probably be useful for gardens in the southern United States it might be worth while calling special attention to them in these pages.

The genus is closely related to Magnolia, differing only in the arrangement of the carpels and their mode of dehiscing. They are all trees or shrubs, and, so far as I know, evergreen. The flowers are generally large and very fragrant. Fifteen species are known, and in their distribution they are very remarkable, being found in South America as well as tropical and subtropical Asia, extending up to Japan. Only few of them have as yet been introduced into gardens, the oldest among those now in cultivation being Talauma Candollei, which first flowered at Kew in April, 1862, and has flowered there probably every year since. It is grown in the Palm-house in a pot, where it forms a leggy shrub, six feet high, with ovate dark green leaves six to ten inches long. The flowers are solitary on the ends of the branches, nodding, about six inches across when fully expanded, the sepals and petals fleshy, creamy white, changing with age to a tawny brown, and, from the time when the buds first burst to the fall of the petals, emitting a powerful and delicious pineapple-like odor, one flower being sufficient to fill the whole of the large Palm-house with a pleasing fragrance. Dr. Lindley says it can only be propagated by grafting it on T. pumila, but cuttings of it have been rooted at Kew. The plants grow very slow. They require stove treatment, an example tried in the temperate house at Kew having succumbed to the first low winter temperature. In Java, where T. Condollei is a native, it grows to a height of fifteen feet. In the *Botanical Magazine*, t. 6614, there is a figure of a smaller-flowered form which had been sent to Kew by Louis Van Houtte, the Belgian nurseryman, as Magnolia Galleotiana.

Talauma pumila is another Javanese species, much dwarfer and bushier than T. Hodgsonii, and, though smaller in flower, quite as powerfully fragrant. It has been grown at Kew many years, forming a bush two feet high, with ovate dark green leaves four inches long, and yellowish white flowers three inches across. A plant has been in the temperate house for some years, but it grows slowly there, and rarely blooms, whereas in the Palm-house it flowers annually.

Talauma Plumieri is a native of Dominica and St. Lucia, in the West Indies, but it has not yet been introduced into gardens. It forms a large tree, often eighty feet high, the wood of which is strongly scented. The leaves are ovate, four to six inches long, glabrous, with strong venation, and the flowers are as large as in T. Hodgsoni, white, tinged with pink, and very fragrant.

Talauma ovata was discovered in the Organ Mountains, Brazil, by Gardner in 1838. He describes it as a large tree about forty feet high, growing in swampy places, and says the powerful odor exhaled by the flowers extended more than half a mile from the tree. The flowers, which are as large as in Magnolia conspicua, are of a dull yellow color, and the fruit as large as a man's fist. Another name for this species is T. fragrantissima.

Talauma gigantifolia, a native of the Malay Peninsula, is remarkable for the size of its leaves, which are sometimes a yard long and a foot wide. It forms a large tree, the flowers being four inches across, white and very fragrant.

Talauma mutabiles, a native of Moulmien, is very similar to T. Candollei, and has white, very fragrant flowers.

London. *W. Watson.*

When vistas are to be cut through tall-grown wood a clear idea of the effect from every view-point is essential. This can be gained at any season, but the work is most successfully done in spring; for the structure, as well as the outline, of each tree may then be distinctly seen. During some days accordingly, as the progress of vegetation is slow or rapid, scarcely any two trees are exactly of the same color; while one retains its wintry hue, another is forming colored buds, a third is in fuller bud, a fourth bursting, a fifth in pallid leaf, a sixth of a deeper tint, so that, at this critical juncture, the branches of adjoining trees may be seen distinctly, how intimately soever they may be mixed with each other; and thus the outline of either may be seen, before the other be removed.—*Planting and Rural Ornament, 1796.*

New or Little-known Plants.

Protea cynaroides.

SOME account of cultivated Proteas, with a figure of P. nana, one of the small species of the genus, was given in Garden and Forest, vol. iv., p. 412. The figure on p. 35 is from a photograph of a specimen of the largest-flowered species, which is grown in a sunny, dry greenhouse at Kew, along with Agaves, Aloes and other succulent plants. Here it is planted out in a bed of gravelly soil, and it is now eight feet high, with half-a-dozen stems, each an inch in diameter, clothed half-way down with bright green leathery leaves, not unlike those of a Griselinia. The flower-heads are large, the largest like the flower-heads of Artichoke, Cynara Scolymus, and colored bright pink. They last a long time, several months, and are very attractive, both in form and color. When I was in South Africa in 1887 I saw thousands of these plants growing wild on the sides of hills, their roots among the large stones which were thickly strewn among the gravelly soil and their stems four or five feet high. I never saw one as tall as the plants at Kew, and this is to be accounted for by the stems breaking off at the base easily if unsupported. At Kew they are supported with a stake, consequently stems which have flowered push into fresh growth at the top and flower again.

The inflorescence of Protea is composite, a large number of small flowers being aggregated in a head and surrounded by colored leaves on bracts. When the heads of P. cynaroides first open they are full of honey and are known to the Boers as honey-pots. This honey is collected and made into a kind of sugar. I saw large bushes of other species of Protea in the neighborhood of Grahamstown, some of them in flower, and they were quite as effective as big specimen Rhododendrons are when in bloom. They all grew in fairly exposed situations on the hill-sides, and often in positions where there was very little soil for the roots. They ripen seeds freely. Proteas would be excellent shrubs for the gardens of the southern United States. There are about sixty species of them, all African, and all sufficiently attractive in flower to be worth a place in the garden. Once they were popular in English gardens, but now they are practically unknown here.

London. *W. Watson.*

Plant Notes.

Richardia Elliottiana.—This Calla, as we saw it in the Temple Garden Show, in London, last spring, was a most interesting plant, with its spathe of clear rich yellow and its foliage mottled like that of Richardia albo-maculata. Comparatively few plants have yet been imported into this country, but last week we saw them flowering in one of the houses of Messrs. Pitcher & Manda at Short Hills, New Jersey, and our good opinion of the species was confirmed. Three years ago an account was given in our London letter of the sale of the stock of this plant at auction by Captain Elliott, who had originally raised it from seed which he had received as that of a red-spathed Calla. He increased the stock by seed and offsets until he had some two hundred and fifty plants, and he sold these at auction for more than $2,000. The plant had already received the first prize as the best new plant in bloom at the International Horticultural Exhibition at Earl's Court, in London. It differs from the yellow-flowered R. Pentlandii, which is tinged with purple at the base of the spathe on the inside, and which does not have the finely mottled leaves of R. Elliottiana. As observed at Messrs. Pitcher & Manda's, the plant seems quite as vigorous and floriferous as the ordinary Calla, although the leaves appear somewhat more dwarf, so that the flowers stand higher above the foliage. The tuber resembles that of an ordinary Caladium, and every tubercle, if removed and carefully attended to, will grow into a flowering size in less than two years. There can be little doubt that this yellow Calla will soon find its way into every collection of plants and every florist's establishment throughout the country.

Coreopsis grandiflora.—An excellent colored plate of this, the best of all garden Coreopsis, is published in a recent issue of the London *Garden*, and it reminds us to repeat what we have already stated more than once, that this plant was long distributed in this country, and is now largely known in gardens here as C. lanceolata; that is, a better plant was sent out in the place of an inferior one, the true C lanceolata being a good perennial, but not nearly as showy since the flowers are much smaller. The plant, however, is much hardier, since the crowns of C. grandiflora are quite often killed by New England winters if it is left outdoors. The latter is more inclined to a tufted habit, and when grown in pots for early spring decoration it is a most useful plant. The difference between the two plants is easily recognized, even in the seeds, those of C. grandiflora being larger and not so dark in color as those of C. lanceolata. The true C. grandiflora has been distributed as Coreopsis "Harvest Moon," and will be readily recognized under this fanciful though inaccurate name. In the length of its flower-stalks, the size of its flowers and the freedom with which they are produced, C. grandiflora is the best of the garden Coreopsis, and its liability to winter-kill in the north is not so much of a drawback as would be expected, owing to the freedom with which young plants are produced from self-sown seed in the borders. These are hardier than two-year-old plants, and live through the first winter, flower the next year, should then be replaced by self-sown plants or by some that have been protected over winter in cold frames.

Chorozema varium, var.—A correspondent writes of a seedling from a variety of Chorozema varium which seems to have a more compact habit than the parent plant, and is now covered with racemes of richly colored flowers, which are almost as large as those of a garden pea. This is much larger than these flowers usually are, but they vary much, and European nurserymen now offer garden varieties said to be much superior to the old kinds. Many of the old kinds are excellent plants, and not really difficult to manage if they are hard cut in after they have done flowering, repotted firmly and allowed abundance of air and light always. They seem to do better here in the open air during summer, so that the new growth will become thoroughly ripened. The Chorozemas are Australian hard-wood shrubs, and the flowers are most of them red and yellow in different shades and mixtures. Most of the flowers are much smaller than those of the variety noted, but what they lack in size they make up in abundance, and in late winter and spring they are excellent for decorating conservatories. In southern Florida, like many other of the Australian shrubs which can endure dryness at the root for some time, they do admirably in the open air.

Cultural Department.

Peach Yellows.

PROFESSOR L. H. BAILEY, of Cornell University, has been making a careful examination of Peach orchards in western New York, where there have been complaints of the yellows, and has been publishing some notes on the subject under the direction of the State Commissioner of Agriculture. Some of his conclusions are these:

The yellows is a distinct disease, attacking the Almond, Apricot, Japanese Plum, as well as Peach, and it attacks thrifty as well as feeble trees. It has been recognized as a disease for a century; is communicable from tree to tree; is incurable, and the termination is always fatal. Its cause is wholly unknown, and no fertilization of the soil will cure it or check its spread. The one very unmistakable symptom by which it can be recognized is the red-spotted character of the fruit, the flesh being marked generally by red lines or blotches beneath the spots. These peaches generally ripen prematurely the

second year; they afterward come smaller and more fuzzy than the normal fruit. The first symptom to appear on the trees, rather than on the fruit, is the so-called "tips," that is, the short undergrowth starting from the upper or terminal buds, usually late in the season and characterized by narrow, stiff, yellowish, small leaves standing out nearly at right angles from the shoot. These tips sometimes appear after the leaves have fallen in autumn, or before the normal growth begins in spring, and they are often seen upon the ends of water-sprouts. The third special symptom is the slender, stiff-leaved, yellowish shoots which come from the body of the tree, or the large limbs, and in advanced cases the shoots may branch into close bunchy tufts. In the final stage of the disease there is a small and slender growth of all new wood with small narrow yellowish leaves, and occasionally a profusion of slender branchy growths in the centre of the tree. Diseased trees die generally in five or six years from the first attack, and the only known means of keeping the disease at bay is to exterminate the affected trees, root and branch. The disease is communicated to nursery stock by affected buds and by buds from branches of affected trees which do not yet show signs of the disease. Pits from affected trees may also be expected to propagate the disease.

Fig. 5.—Protea Cynaroides.—See page 34.

Seed-sowing.

IF a greenhouse is available this is the best possible time to sow seeds of herbaceous plants that were not sown in the fall when gathered. An ordinary greenhouse temperature is most suitable—that is, a temperature such as is required for Carnations, of fifty degrees at night, with a corresponding rise during the daytime with sun-heat. When first sown, the seeds should be covered with some non-conducting material, as a thick sheet of paper. Chopped moss is advocated by some growers, and this answers well enough if it is known about what time the young plants will appear. But if, as often happens, the seeds are slow in germinating, it is not well to use the moss. If the seeds are covered with glass it must be turned each day to get rid of the superflous moisture, or they will decay. We never use glass except for very small seeds, to avoid too frequent watering and the consequent washing out of the soil that sometimes takes place even from spraying. All the smaller seeds should be placed by themselves, so that they can have special care and attention. Small seeds are often sowed too deep, and so fail to germinate. A safe rule is to cover them with a depth of soil equal to the size of the seeds. A suitable soil is one composed of equal parts of loam and leaf-mold, with plenty of sand to make it porous, and, if it is possible to obtain charcoal-dust, this is beneficial, but this is not easily obtained now. When Japanese Lily-bulbs were exported in this material it was more generally used, and proved of great value in all potting soils. Any one who has charcoal-dust for sale would do the gardening public a kindness by making the fact known.

Seeds of hardy plants especially are best sown thinly over the surface. Seedlings which are thickly crowded are necessarily weak, and if decay does not set in in the seed-box it is likely to attack them after they are transplanted. A heavy watering followed by a dull day is often the cause of great mortality and disappointment.

Seeds sown now will make strong plants by April, when they can be hardened off in a frame, and later on planted in the open ground. By sowing seeds of herbaceous plants now this work will be out of the way before the seeds of garden annuals require to be sown, a real advantage where many annuals have to be sown each year.

South Lancaster, Mass. *E. O. Orpet.*

The Newer Chrysanthemums.

ON page 18 of the current volume of Garden and Forest Mr. J. N. Gerard comments on the newer varieties of Chrysanthemums as compared with the older kinds, and adds that little attention has been given to the raising of such varieties as will bloom in the open garden. In part this is true, and in part it is misleading. For many years much attention has been given by European growers to early-flowering varieties that will bloom to advantage, and thus make attractive outdoor plants. These are known as the Madame Desgranges (syn. G. Wermig) type, and in Europe they have been found to be a useful class of plants. Messrs. Peter Henderson & Co. enumerate a large number of the more recent early-flowering varieties in their catalogue of last year, and doubtless there are many other growers in this country who devote considerable space to them. But, so far, they are an unsatisfactory group in our climate. The hot days and cold nights of our autumn months can hardly be called favorable to their best development, and hence, to insure a crop of good flowers, they must be grown under glass, like the later-blooming kinds.

A great deal is said about the beauty of those old-fashioned varieties that will survive a few degrees of frost. As a matter of fact, most of the modern varieties placed in commerce before 1890—I have not seen the later sorts tested—will live and bloom through similar hardships. It is believed by many persons that the flowers of such plants, old as well as new, are still exquisite when in reality they are seriously disfigured by eight or ten degrees of frost, and I never could see any great beauty in a bloom one-half of whose florets had been blackened by the cold. There are, of course, various contrivances by which plants out-of-doors may be protected from early frosts; but in the case of a plant so indisputably tender as the Chrysanthemum, it seems to me that the expense of a greenhouse would be slight in comparison with the constant trouble and worry in watching the barometer and in placing and removing the protecting material. Many plants of a far hardier nature than the Chrysanthemum, such as the Hellebores, for instance, have their beauty much marred by exposure to the elements, and, judged alike from the standpoints of pleasure and expense, I know that it pays to place a cold frame or a greenhouse over such plants.

Peter the Great has been cited as a very desirable variety, and with many others of a bygone generation it deserves commendation. It is one of those good old varieties which have endured the test of time, but which are now being crowded out by the newcomers. Many considerations prompt us to plead for these veterans; they have done yeoman service in the past, and we must feel sympathy for their past triumphs. But their day is over, and the laurels must now go to the newer, and, it must be admitted, the better races. Peter the Great, as I remember it, bore magnificent blooms. But as I have seen it in recent years it is quite as good, so that it is the advance of other kinds, and not the deterioration of this one, that has left it in the rear. The habit of Peter the Great, like that of many old varieties, was ungainly, and to obtain flowers from them of good size and quality it was and, with all our improvements in methods of culture, is still necessary to grow the plants with stems from six to eight, and even nine, feet high. Compare this with many of our modern American varieties, producing blooms of the greatest excellence on stout stems from three to four feet high, and clad with luxuriant foliage almost to the base of the flower.

It may be said that these fine single heads are not the true test of the value of a Chrysanthemum. But when the new varieties will not only endure this test, but will equal or excel the older ones when judged by any other standard, it will be seen that there is little besides sentiment to justify the cultivation of the good old sorts. No doubt, flowers are worth growing for sentiment alone, and if so, let it be admitted frankly. This is certainly better than to claim for old favorites a grace or beauty which they do not possess.

Cornell University. *M. Barker.*

Primula Sinensis.

THESE plants are in good form now and will continue to make a fine show for months to come. For the decoration of a cool greenhouse they are indispensable during the winter months, while the double varieties are very useful for cut flowers. The best time for sowing seeds is the end of March or the beginning of April, and a very suitable soil for the seed is equal parts of loam, leaf-mold, with sand to cover the seeds lightly. Heat and moisture is what the seeds need until they have germinated, after which they should be gradually exposed to light and air to prevent them becoming drawn, to which they have a tendency during all periods of their growth. They should be potted singly into small pots when large enough to handle; the soil should be finely sifted and have a little dry, well-rotted cow-manure added. They should never be allowed to become pot-bound, as it causes premature flowering, which greatly retards the growth of the plants. For the final shift six-inch pots are quite large enough, and good specimens can be grown in five-inch pots.

A cold frame in as cool a position as possible suits them best during the summer months; the roots, especially, must be kept cool, which is best done by plunging the pots in ashes or half-rotted leaves, they may be shaded from strong sun, but should have abundance of light and air to keep them strong and bushy. All flower-buds should be pinched off as they appear until about the middle of October, which is also a good time to get them into winter quarters. After flowering commences, occasional applications of liquid-manure is very beneficial, but this must always be applied in a weak state.

The double varieties are hard to procure from seed and are generally propagated by divisions. This is best done by removing a few of the bottom leaves and plunging the plants well down into a bed of leaf-mold and sand, where they will make fresh roots from the bare part of the stem and can be divided into single crowns and potted up separately.

Tarrytown, N. Y. *William Scott.*

Celeriac.—Almost every one who relishes celery will like this vegetable quite well, and yet it is rarely seen in country gardens, although it would seem that everything which adds variety to the home table would be tried. The edible part of this turnip-rooted Celery, as it is popularly called, is the root, although the top can be blanched and used, but this is stronger in flavor than celery and not as crisp. The seed should be sown in a flat and covered lightly, and if paper or glass is laid over it any sunny window will be a good position for it, although where there is a greenhouse this is the best place. The covering should be removed before the plants become drawn, and they should be transplanted when an inch high into other boxes two inches apart, where they may remain until they are set into the ground the first of May. The rows should be two feet and a half apart, and the plants may be set nine inches apart in the row. The roots will be large enough to eat early

in September. They can remain in the ground, however, and will continue to increase until heavy frosts about the first of November, when they should be brought into a light cellar where the temperature never descends to the freezing point. If they are set on the ground close together and watered well, the roots will take hold and keep them fresh. Celeriac is good in soups and dressings, and makes a delightful salad when boiled and sliced.

New York. *R.*

Lilium elegans.—This Lily, with its various forms or varieties, makes one of the best groups of the whole genus. All of them will thrive in ordinary garden soil, with less care than most species. With me the bulbs take hold the first year and seem quite free from decay. L. elegans is a native of Japan, and, thus far, has proved hardy here. The bulbs increase in size so that moderately small ones, if well fed the first year, become large by the second autumn. The price, too, is much in their favor for general use, as most of its varieties can be had at reasonable rates. There are, however, so many forms and synonyms for this group, that one is lost in making a selection from some of the lists. One house in Europe offers no less than thirty-four forms under various names and prices, which, no doubt, might better be reduced to ten or twelve. One variety, called Elegans semiflore-pleno, is a half-double form, while there is recently offered, among novelties from Japan, a double-flowered variety called Elegans florepleno. L. Thunbergeri, L. umbellatum and L. Batemanni, together with their sub-forms, all belong to this species. The variety Alice Wilson is said to be one of the best, but unfortunately the price is still quite high. Although there are prominent distinctions between many of the forms of this Lily, such as shades of color, height, time of flowering, etc., yet, of the five or six which have been tried here, there is little difference so far as their disposition to thrive with common care. Even in dampish ground, where only such kinds as the L. superbum, L. tenuifolium or L. tigrinum would be expected to prosper, these forms of L. elegans have increased and bloomed.

Charlotte, Vt. *F. H. Horsford.*

Correspondence.

Carnations in Flatbush.

To the Editor of GARDEN AND FOREST:

Sir,—Among the most extensive growers of Carnations for the New York market are Messrs. Dailledouze Brothers, of Flatbush, Long Island, who have 36,000 feet of glass. In connection with Carnations, they grow a strain of large-flowering Mignonette, which they have established by long continued selection until it is quite distinct, although unnamed. A week ago, when ordinary Mignonette was bringing $3.00 to $4.00 for a hundred spikes in New York city, this stock commanded $10.00 to $12.00 for seconds. The choicest heads at the same time brought $3.00 a dozen at wholesale, and the largest trusses were sold by them just before Christmas for as much as $6.00 a dozen, a price said to be higher than has ever before been realized for Mignonette. These selected spikes were ten inches long, with a good diameter, and were very compact. The stems are stiff and the foliage heavy and flowers close.

The seed is sown about the first of September in solid beds, and in rather heavy soil. The plants are thinned out after they show four good leaves, which is about five weeks after the time of sowing. They are tied up and watered sufficiently often to keep them moist. After they start to flower, liquid stimulant is applied once in two weeks, chemical mixtures, cow and sheep manure and other fertilizers being used in turn, since Mignonette likes a change of food. Strong plants bear six to eight spikes each. The seed is gathered about the 15th of April, the best plants being saved for seed.

Carnations are, however, the main crop here at this time. In houses devoted to the older sorts are long stretches of the variety William Scott, which is considered here the best all-around pink Carnation for commercial purposes. It grows strong and produces freely large pure pink flowers with crisp petals. The later-flowering Madame Diaz Albertini, with its strong clove fragrance, also bears large flowers of good color, the outer petals being a lighter pink than the rest of the flower. Emily Pierson, originated by A. N. Pierson, of Cromwell, Connecticut, is here a good scarlet; it is late, not being ready to cut until after the holidays, but is better than Portia, being a continuous bloomer, with larger flowers and stiffer stems.

The yellow Bouton d'Or, which originated in France in 1889, has been tested in this country without much success and has been given up by most growers. Under the hands of Messrs. Dailledouze, however, it grows strongly and blooms freely for a yellow Carnation, and is the only variety of this color which flowers abundantly enough to make it a commercial success. It is just beginning to furnish flowers for cutting. They are a good clear yellow in color, with carmine markings on the edge and through the middle of the petals.

Daybreak proves a good standard commercial variety, and has been cut since last fall. It is healthy, with good stem and calyx and of large size; and has good keeping qualities. The fragrant Tidal Wave is considered the best carmine, and has done well for ten years. It has been in bloom since the middle of September. Lizzie McGowan is esteemed the best white. The flowers need to remain long to develop and mature, and ten days from the time they open is not too long to leave them on the plant.

The newer Carnations included Annie Pixley, originated by Albert M. Herr, and sent out last year. It is a tall grower, a good rosy pink of solid color, and is of medium size. Helen Keller grows to extra-large size, and brings the highest price of any Carnations grown. It is considered by the Messrs. Dailledouze to be the best variegated Carnation. Adalina Kresken, sent out in 1894 by Peter Herb, has been a disappointment, the calyx bursting badly. The pink Nicholson does not do well here, and seems to need a lighter soil. Sweet Briar, sometimes called the Sleeping Beauty, resembles Annie Pixley, but is a deeper pink. It stands up well here, although a mile to the south, on lighter soil, it "sleeps" badly. The color is a good pink. Jacqueminot is a glowing bright crimson, sent out by Fisher & Sons. It is small, a fairly good bloomer, and has a good stem. The new white, Uncle John, is a failure here. It lacks constitution and is subject to rust. The Stuart, which took the gold medal in Indianapolis a year ago, is inconstant, too many of the flowers being streaked and poor in form. The few perfect ones are a fine scarlet, with a rich metallic lustre. This variety is not likely to become a standard.

The cuttings of Carnations are made in March, and are planted out the first week in May. In September they are planted in the benches, and the flowers come in salable quantity about the 15th of October. First varieties ready to cut are William Scott, Daybreak, Portia and Lizzie McGowan. Among the latest are Emily Pierson and Madame Diaz Albertini. The earliest cutting varieties, with Tidal Wave, are the most continuous in flowering.

Brooklyn, N. Y. *M. B. C.*

Orchids at Short Hills, New Jersey.

To the Editor of GARDEN AND FOREST:

Sir,—This is not the season of the most profuse bloom in Orchid-houses, but flowers are never lacking at the United States Nurseries, and just now a large house filled with plants of Cattleya Trianæ produces as pleasing an effect of soft colors as one would wish to see. I have no idea how many thousands of plants there are here, but every bulb and leaf seem to rejoice in perfect health, while the flowers are of the largest size and of the richest color. C. Trianæ is one of the commonest and most popular of Orchids, but there is a wide difference between plants of the best varieties which have been treated to the most intelligent cultivation on the one hand, and the ordinary run of the plants which are allowed to bloom as they will, on the other. I never saw together so many plants of this Cattleya which were really of such high quality. Of course, there were some large specimen plants, one of them showing fifty flowers, but the charm of the collection did not come from these conspicuous individuals, but rather from the unusual health and vigor of the entire lot. The firm is cutting these flowers every day by the hundred, and they often have more orders than they can fill. For choice flowers they have realized at wholesale as much as fifty dollars a hundred, which, perhaps, means nearly twice as much at retail, when the expenses and inevitable losses are taken into account. Mr. Pitcher finds that it pays him well to sell Orchid-flowers in connection with the business of selling plants. The demand for them seems to be strong and unflagging, and I saw letters from as far west as St. Paul, and even from Denver, acknowledging the receipt of large consignments of Cattleya-flowers in excellent condition. C. Percivaliana is just passing out of bloom, but the flowers, although they are smaller than those of C. Trianæ, have brought good prices, since they come when few other Orchids can be found in the flower market. After the season of C. Trianæ is over, C. Mossiæ, with which another house is filled, C. gigas and C. Mendelli and others will keep up the succession. Many of these plants are showing buds and are making larger and better pseudo-bulbs than they originally grew in their native habitat.

One of the most interesting of the group of Orchid-houses

was a long lean-to against the north side of the brick wall of another house. This house in the rear is really an excavation; so much below the level of the house against which it is built that the sun in the winter never shines upon the plants. The earth has been allowed to remain at its original level under the bench on the south side, so as to bring the moist surface close to the plants, and to serve a similar purpose a tank of water extends under the whole length of the bench on the north side, and above this tank there is continuous ventilation. The wall on the south side is really one side of a long cistern in the adjoining house. This also helps to keep the place cool and moist in summer, so that it is pronounced by experts an ideal house for Odontoglossums. It is one hundred and thirty feet long, and it is filled with plants of Odontoglossum crispum, which cover the benches and hang from the roof to the number of six or seven thousand. Of course, these are not yet fairly in bloom, although a few sprays have been cut, but the thriftiness of the plants and the strong shoots, which were covered with buds, gave promise of an extraordinary exhibition in four or five weeks. These flowers will all be sold, and retailers will pay for the sprays according to the number of flowers on them at the rate of forty or fifty cents for each single flower.

Cypripediums continue, as of old, a great specialty here, and all of the standard varieties are grown in great numbers. But besides these and all the choicer varieties, there are three or four thousand seedlings coming on in all stages of development, from tiny plants which are just visible above the moss to others in full flower. Among the new varieties in bloom I noted C. Sallieri Roeblingii, a cross between C. insigne Amesianum and C. villosum, which shows a fine flower with a wide white margin on a rich chocolate dorsal sepal. C. Hebe purpureum is distinguished by its midrib of deep purple suffused with rose. Alcides is another fine plant, the offspring of C. hirtissimum and C. insigne. Near the seedlings is another house showy with masses of Lælia anceps and L. albida in flower, and it contained a magnificent variety of Vanda cœrulea in flower. When compared with another variety near it the great spike, which carried something like twenty flowers, seemed to belong to another species. The flowers are larger in every way, the sepals and petals are broader, and the color was a much purer blue.

A run through the houses on the hillside and the group of twenty on the plain below shows considerable change in the character of the stock from what it was a year or two ago. Many of the specimen Palms and Tree-ferns still make the centre house as shady as a tropical forest; but, as a rule, the collection is less miscellaneous than it once was, and there is a tendency to grow in quantities plants of standard varieties which are used by florists. Of course, there are novelties and rarities and specimen plants, so that the searcher for these things will find what he wants, but they are not so conspicuous a feature of the establishment as they once were, Mr. Pitcher having the idea that, owing to the limited number of amateurs who make collections of choice specimens, this part of the business can more easily be overdone than the growing of Palms, Ferns, Araucarias, Dracænas and other plants which form the staple of the florist's general stock. There is no lack of interest, however, in this part of the establishment, and many visitors would probably consider the houses filled from end to end with well-grown plants of Adiantum Farleyense worth going a journey to see. Certainly, no other plant can equal this Fern for massing, so as to produce effects of almost cloud-like lightness.

New York. *R.*

Shall we have an Orchid Society?

To the Editor of Garden and Forest:

Sir,—Cypripediums are grown more frequently in American collections than any other members of the Orchid family, and they bid fair to become as popular for decorative purposes here as they are in Europe. Their flowers show great variety in form and color, and have lasting qualities that are unequaled. Some Orchids are favorites at once, but the taste for Cypripediums seems to be an acquired one, and one that usually comes after experience with other Orchids. Nevertheless, they are already so popular, and the raising of seedlings has become so general, that questions of nomenclature have become important. If the present ratio of increase here in new varieties continues long, we certainly ought to have some authority recognized on this side of the Atlantic as competent to give certificates of merit and stability of names to such seedlings or hybrids as are worthy of perpetuating.

It seems to be unfair that our growers should be compelled to send material for such judgment to Kew, not only on account of the delay, but because of the difficulty in getting the material there in good condition. If we had an Orchid Society established here its certificates would add value to new plants raised here and give authority for naming them. Our growers of seedlings and hybridizers sometimes feel that they do not receive due credit for their work, and this would not be the case if such work were passed upon by a society of recognized rank, whose proceedings would be published, copied and spread abroad over all the civilized world. We should know little of the work done by amateur and professional cultivators in Europe were it not for the societies which give awards for this work, and these awards are, as a matter of course, published in horticultural periodicals. It seems evident that an Orchid Society here would do, to a certain extent, for American growers what similar organizations in Europe are doing for the producers of new and improved varieties in Cypripediums and other Orchids in Old World gardens.

South Lancaster, Mass. *E. O. Orpet.*

The Forest.

The Consumption of Wood in the Comstock Mines.

In no other group of mines in the world have such large quantities of timber and wood for fuel been used as in those on the Comstock lode. The Hon. William Alvord, of San Francisco, California, prepared a paper on the consumption of timber and wood in these mines for the meeting of the American Forestry Association in 1891, but the paper has never been published. The facts are so interesting, however, that we have asked Mr. Alvord to allow us to use such portions of it as would be most interesting to our readers.

The walls, ore bodies and, generally speaking, the entire formation of this lode are remarkable for want of firmness and tenacity. The friable nature of the ore, which renders its mining comparatively easy without blasting, except to fracture large masses, has a counter disadvantage in requiring an expensive and complete system of timbering in order to make its extraction safe. Again, some of the mines of this lode are, or have been, operated at a depth considerably exceeding 3,000 feet. However, the chief reason for using large quantities of timber is the great width of veins carrying high-grade ore. On the 1550 level of the Consolidated Virginia mine a vein 330 feet wide has been worked out clean, and in it and various other mines of the lode, veins ranging from 65 to 200 feet wide have been worked out in the same manner. The ore of the vein in the Consolidated Virginia, above referred to, furnished an average yield of $126.00 in silver and gold to the ton. Such ore is too valuable to be utilized for chamber-walls as principal supports, as is done in most of the mines of the world.

The enormous pressure resulting from the weight of the overlying formation, augmented by the absence of the usual chamber-walls as principal supports, is sustained by an elaborate network of costly timbering, which has been admired for its completeness, safety and structural strength by many of the most skillful mining engineers of the civilized world. Without vast quantities of massive timbers to keep the walls in place, and corresponding quantities of wood to generate power for pumping out the water, hoisting the ores, reducing and amalgamating them and retorting at the mills, the great bulk of the precious metals which the Comstock mines have poured into the lap of nations would never have been discovered, and its extraction would have been practically impossible. The constant requisitions of the Comstock mines upon the mountain-forests have led to the christening of the lode as "The Tomb of the Sierras."

When the mines of the Comstock lode were discovered the surrounding mountains were sparsely covered with a growth of scrubby Pines, Pinus edulis, commonly known as the Piñon or Nut Pine, interspersed with a stunted variety of Red Cedar, Juniperus Virginiana. These woods were the most valuable of all for fuel, being hard, resinous and fine-grained, but were worthless for timbers and lumber, being too small. They supplied the wants of the mines during the prospecting and surface-mining eras and as long as fuel only was wanted, but as soon as any considerable depth was reached the supply was entirely exhausted, and the most easily accessible forests of the eastern slope of the Sierra Nevada were encroached upon, and ever since then the forest-line of these mountains has been pushed westward before the axe, until now it is west of the eastern crest of the Sierra range and almost on a line parallel

with the western shore of Lake Tahoe, and fairly within the limits of the state of California.

Timbers, lumber and wood have been chiefly supplied in late years to the Comstock mines from the southern portion of the Lake Tahoe basin, on the California side of the state line. The wood and logs are first transported about twelve miles by rail to the lake-shore at Bijou, the railroad extending over piles 1,700 feet out into the lake to a depth of water where the steamers and barges can moor alongside of the track. The wood is unloaded from the cars on barges, which have a carrying capacity of from 75 to 140 cords each. The logs are dumped from the cars into the lake and enclosed in boom-timbers, forming immense rafts, and then towed by powerful steamers to the eastern shore of the lake. At this point the logs are sawed into timbers and lumber, which, with the fire-wood, are reloaded on cars and transported up a long incline to the summit over another railroad about ten miles long. At the summit it is unloaded and is conveyed through a flume about twelve miles to the wood and lumber yards at Carson City, Nevada, and from there it is taken by rail twenty miles to the mines, making a total distance of sixty-five miles from the forest, over two rugged mountain chains. From the forest to the mines the timber, lumber and wood are necessarily handled thirteen times, but the arrangements are so methodical and complete that the whole system is operated with mechanical regularity and precision. The flume is V-shaped, with a carrying capacity of 600 cords of wood a day, and it will transport the heaviest mining timbers as well as lumber and cord-wood.

To the present time 120,000 acres of the Sierra Nevada's choicest forests around Lake Tahoe and 75,000 acres around the headwaters of the Carson River have been denuded to operate the mines. This area was practically all heavily timbered, and when it is considered that it equals an expanse of land three hundred and five miles long by one mile wide it will be apprehended that there is good reason for calling the Comstock "The Tomb of the Sierras."

From January 1st, 1880, to January 1st, 1891, 249,756,000 feet of timber and lumber were shipped to and used in and about the Comstock mines. During the same period, 100,776,440 cubic feet of wood were consumed, and to the latter amount should be added 11,264,000 cubic feet consumed by the Carson River mills, auxiliary to the mines, making a total of 875,316 cords. For the decade commencing January 1st, 1870, and ending January 1st, 1880, the timber, lumber and wood used cannot be ascertained with exactness, but a conservative estimate by men most familiar with the facts fixes the figures at 425,000,000 feet of timber and lumber and 268,800,000 cubic feet of wood, to which should be added 10,240,000 cubic feet used in and about Carson River mills.

A moderate estimate of the average price paid at the mines for timber and lumber since 1870 is twenty-three dollars a thousand feet and for wood ten dollars a cord, so that the Comstock mines since 1870 have used wood and timber to the total value of $46,072,548.

The consumption of forest-products by the mines for the period between the discovery of the Comstock lode and 1870 can hardly be approximated, as there are no data for that time obtainable, but $55,000,000 is probably a moderate estimate of the entire cost of timbers, lumber and wood used in and about the Comstock mines from the date of their discovery until the present time.

The seemingly endless labyrinths of timbers in the Comstock mines, when ignited and beyond control, make a subterranean fire which burns and smolders for years. Many lives have been lost in the mines by reason of these fires, but none are recorded as having been lost because of any inherent defect in the timbers or system of timbering. The size of the timbers used varies from the huge pieces sixteen inches square and twenty-four feet long, to the smaller pieces eight inches square, used in cribbing. The species used are chiefly Yellow Pine, Pinus ponderosa, Fir, Picea magnifica, and Cedar, Thuya gigantea, of which the latter is found in such small quantities as to be hardly worth considering. Fully two-thirds of the whole amount used is yellow pine, about one-third fir, and less than one per cent. is cedar. Yellow pine is a favorite timber with mine carpenters on account of its exactitude in joining. Cedar is inferior to no known timber, not even excepting Redwood, for its lasting qualities underground. Yellow pine has been taken from the lower levels of these mines so compacted by the enormous pressure it has withstood as to have a density and weight exceeding those of Lignum-vitæ, and has been made into paper-weights and other beautiful ornaments. None of the timbers in the Comstock mines have yet badly decayed, and their life there cannot be accurately determined. The heat and vapors of the mines surcharged with mineral atoms appear to have a decidedly preservative effect upon the timbers.

The area upon which the forest has been cut off to supply the mines is now growing up, principally in Pine, but the second growth is so slow that it will require many years for it to attain a size sufficient for mining timber. The new growth is very thick, and on some of the lower slopes of the mountains where it is over twenty years old there are few trees ten inches in diameter, and the average diameter will not exceed six inches. In the Tahoe basin, which has been cut over principally within the last ten years, the young trees are about five feet high and will average about four inches in diameter. In the Sierra Nevada Fir predominates on the north slopes where the snow remains the longest and the sun shines the least. On the other slopes Pine largely predominates.

Recent Publications.

The Book of the Rose. By Rev. A. Foster-Melliar, M.A. Macmillan & Co., New York. 1894.

This title seems rather too ambitious in view of the fact that only certain classes of Roses are treated, and their cultivation for but a single purpose is described. The author does not consider the Rose as a decorative plant, its value, in his view, consisting solely in the perfection of its individual flowers. The single-flowered species are, therefore, dismissed with scant attention, since no one ever won a silver cup at a Rose-show with an individual flower of a single Rose. Half a dozen lines are given to Rosa rugosa, and one line to our Prairie Rose, R. setigera, which the author calls the Bramble-leaved Rose. This, and many others which he does not name, he declares have only a botanical interest, making no mention of so good a plant as R. Wichuraiana or of R. lutea, besides many other useful single Roses. The Sweetbrier, so long celebrated in English poetry, has secured brief mention, chiefly because Lord Penzance has been hybridizing the plant with the view of getting some double-flowered varieties, and the author is forced to grieve because these efforts have been only partially successful, semi-double varieties alone having been obtained. From all this it will be seen that the book is prepared chiefly for enthusiasts who cultivate Roses for the purpose of securing exhibition flowers, and for such specialists it will afford the keenest pleasure.

The book opens with the usual chapters on the history and classification of the Rose, which tell nothing particularly new, and these are followed by notes on soil and situation, laying out of beds, fertilizing, pruning, stocks, propagating, etc., with directions which are mostly adapted to the English climate, and are, therefore, not very useful to Americans. Nor will American readers find much assistance in the chapter on Roses under Glass, because our own growers excel their English brethren in this matter, although it is by no means possible to raise such beautiful roses here in the open air as can be done in England. The chapter on Exhibiting is most interesting. We can hardly expect that Rose-shows will be such important events in this country as they have been in England; nevertheless one cannot but admire the wonderful care and pains which are taken in order to present the individual flowers, if not exactly at their best, at least in such a condition that they will be considered best by the judges who have an ideal of their own. We are told how to remove the buds, and which buds are to be chosen, if we are to secure the coveted prize; why different treatment should be accorded to different varieties in order to prevent some flowers from becoming too coarse or too full, or from being too long in opening; why some varieties should only have one bud on a single stem, and what precaution should be taken in such cases to prevent malformation; how "protectors" should be prepared and when they should be removed; why and when the buds should be shaded; how to paper and dress them, and how to exercise generalship and legitimate maneuvering for the last hour before the judges enter—all this is told with great skill and knowledge, and is certainly very amusing, and is instructive, too, in

showing what can be done to make a flower perfect, according to any given standard, by persistent and intelligent care.

The part of the book which will be of the greatest use to American readers, however, is the chapter entitled Manners and Customs, which, in a thorough way, makes mention of the peculiarities of habit, general appearance and behavior, under different circumstances, of the best-known varieties. The list is not complete like the admirable one in Mr. Ellwanger's book, but the descriptions of the varieties which are named are much more minute, and all the drawbacks, as well as the good qualities of the show-varieties, are noted. The demerits and bad habits of each are pointed out just as their good qualities are, and besides the peculiar ways which mark different groups or families, the "manners" of individual varieties are set forth so thoroughly that one feels sure that the author is familiarly acquainted with all of them and that he writes out of abundant personal experience. The book is illustrated with several half-tone plates, and many of them really help the text. They are not as well executed as American half-tone work usually is, although some of them show admirably the texture of the leaf and the shading of the petal. Perhaps the judge of an English Rose-show would like the prize plant whose illustration fronts page 181, and certainly it shows the highest cultural skill. Persons who prefer Chrysanthemums tied and staked into a perfectly globular form, and with flowers appearing at equal distances all over the surface, will probably like this Rose much better than one naturally grown. The reverend author tells us that it will often take a man three days to tie and wire one of these big plants into the shape of a pyramid, globe or cone. Sometimes they are trained with a flat back and without any growth on that side, and these one-sided plants, according to the author, look well where the pots are stood up against the wall.

Notes.

Mr. J. H. Hale writes to the *Florists' Exchange* that a single nursery company in Georgia has planted a hundred bushels of native chestnuts, which are now in nursery rows simply to produce seedling stock upon which to graft cions of Burbank's new Sweet Chestnut. The company has contracted to propagate a half a million trees.

At a recent exhibition in Holland, Mr. J. H. Schober exhibited fruiting branches of fifty-two species of Conifers grown in his pinetum at Schovenhorst (Patten), on ground which less than fifty years ago was a barren moor. In a catalogue of the Pinetum Schoberianum, published in 1892, one hundred and ninety-nine species and varieties of coniferous plants are enumerated.

Professor Webster, of the Ohio Experiment Station, has been making experiments to determine whether honey-bees are injured by spraying fruit-trees with the arsenites while they are in bloom. These tests seem to show conclusively that bees are killed in this way. Apart from the destruction of the bees and the consequent loss to the apiarist, this would seem to be a bad policy for the fruit-grower, since the presence of bees is acknowledged to be of great value in securing a crop of fruit by their work in pollenizing the flowers.

No species of Orchid as important as the beautiful Cypripedium Charlesworthii was introduced in quantity during the year 1894, but one new genus has been described, coming from the Andes, and forty new species. Two remarkable natural hybrids have appeared, with many striking varieties of natural hybrids already known. The *Orchid Review* gives a list of between fifty and sixty hybrids which are considered sufficiently important to put on record as having flowers for the first time during the year, and, of course, there are many more which can in no way be considered as improvements on existing varieties.

Unlike bananas, which are usually eaten as a dessert fruit, plantains, as is well known, are unpalatable unless roasted or boiled. It is not generally known, however, that the inner undeveloped leaves and the flower-buds of the Plantain are often boiled and eaten like cabbage and made into a curry. A palatable drink is made by covering crushed ripe bananas or plantains with water and allowing the mixture to stand for a few days until it ferments. Since Bananas and Plantains are singularly free from diseases, there is, no doubt, a promising future for their cultivation, as the uses of both for various purposes are largely on the increase. Bananas are now preserved, canned and dried, and both bananas and plantains, when dried and ground, make a meal which is highly palatable and nutritious.

A leguminous evergreen climber, with flowers a foot across, whose petals are pure white, of a tissue-like texture, with a narrow fringe on the edges like gold lace, would certainly present a magnificent spectacle when in full bloom. On page 103 of our last volume, Camoënsea maxima, a tropical African climber, was described by Mr. Watson as bearing such flowers, and although the plant is not new, and many large specimens are found in European glass-houses, it was said that no one as yet had succeeded in flowering it. It was stated also that a plant sent from Kew to Ceylon ten years ago was now flowering with great vigor in the famous botanical gardens of that island, and it has also flowered in the botanical gardens of Trinidad. From the *Kew Bulletin* we now learn that Mr. W. Mackie, gardener to Mrs. Ruddle, of Tewkesbury, England, has at last flowered the plant successfully. No doubt, as its habits become better known these beautiful flowers will be seen more frequently. It has been suggested with great probability that the plant loves bright sunlight and a good deal of it, so that one would think it a promising subject for some of the large collections in this country.

The established fact that leguminous plants are able to gather a portion of the nitrogen they need for food, either directly or indirectly, from the free nitrogen of the air, suggests that it may be worth while to investigate the foraging powers of different plants for other nutrients. Every one knows that in any given soil different plants are grown with different degrees of success, and it seems quite likely that some plants are able to use certain compounds of potash or phosphoric acid in the soil which are not so readily available to others, just as leguminous plants can obtain nitrogen from sources that are not available to the Grasses. Some tests were made at the Maine Experiment Station last year to ascertain the capability of different plants to appropriate phosphoric acid, and they seem to indicate that Wheat, Barley, Corn, Peas, and especially Turnips, can secure this food from crude, finely ground South Carolina rock with greater or less ease, while Beans and Potatoes derive no benefit from it. Of course, definite conclusions can hardly be drawn from one year's work, but these investigations are being continued. It would be a distinct gain to horticulture and agriculture if it could be known in what particular form each particular plant preferred to have its food.

Owing to the unexampled destruction in Florida from the late freezing weather half-rates were allowed to shippers by transportation companies until the 16th of January, so that seventeen and a half cents covered the freight on a box of oranges from Jacksonville to New York. This low charge induced large shipments, and whereas but 12,000 boxes of Florida oranges reached New York during the first week after the crop had been frozen, nearly 60,000 boxes arrived last week. Prices have ranged from fifteen cents to $1.00 a box for frosted fruit, $5.00 being asked for choice oranges gathered before the frost. Grape-fruit seems to have been more severely injured even than oranges and has been selling slowly at the nominal price of fifty to seventy-five cents a box, while Tangerine oranges seem to be the least affected and sell at $1.50 to $2.00. Jamaica oranges now command $5 50 to $6.00 a barrel at the steamer's side. Havana Strawberry pineapples range from $3.00 to $12.00 a hundred, and Aspinwall bananas cost $1.12½ a bunch by the truck-load. English hot-house grapes have advanced in price with the scarcity of Almeria and other sorts, and Gros Colmans bring $3.50 a pound. Large Easter Beurre pears cost $1.00 a dozen. The highest grade of cranberries is quoted at the unusual price of $14.00 a barrel, retail dealers asking twenty cents a quart. Florida cucumbers, cauliflower, chicory, egg-plants, peas and string beans, which a month ago were in regular supply, have been cut short by the frost, and the standard winter vegetables will have to be depended upon for some weeks to come. Some tomatoes from as far south as Key West bring thirty cents a pound for the best, and tomatoes from Cuba cost the same price. Other vegetables now coming from Cuba are onions, okra and peppers, and small supplies of well-blanched Romaine lettuce are now imported from Bermuda. Bermuda potatoes cost $7.50 a barrel, and cabbage from Denmark $6.00 a hundred.